Amendments to the Claims:

Please cancel claims 18-32. Please amend claims 1, 2, 33, and 34 as follows. Please add new claims 50-81 as follows.

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of claims:

1. (currently amended) A system for determining the orientation of an land-based object relative to a source of electromagnetic radiation comprising:

a housing that is constructed and arranged to be positioned at a stationary, land-based location;

a plurality of sensors on the housing, each of the sensors producing a corresponding output signal when placed in the path of electromagnetic radiation emitted by a single source; and

a controller on the housing for receiving the output signals of the sensors, and for determining the orientation of the stationary object including the housing relative to the single source based on the sensor output signals.

2. (currently amended) The system of claim 1 wherein the single source of the electromagnetic radiation is the sun.

3. (original) The system of claim 1 wherein the electromagnetic radiation is of a type selected from the group consisting of visible radiation, infrared radiation, and ultraviolet radiation.

4. (original) The system of claim 1 wherein the sensors are optical sensors.

5. (original) The system of claim 4 wherein the optical sensors comprise photodiodes.

6. (original) The system of claim 5 wherein the output signals are derived from the intensity of light radiation received at the photodiodes.

7. (original) The system of claim 1 wherein each of the sensors has a corresponding viewing angle having a center line, and wherein the center lines are at known orientations relative to each other.

8. (original) The system of claim 1 wherein the center lines of the respective sensors are at angles relative to each other.

9. (original) The system of claim 8 wherein the center lines lie on a plane.

10. (original) The system of claim 8 wherein the center lines intersect at a common point.

11. (original) The system of claim 1 wherein the controller samples multiple sets of the sensor output signals at periodic time intervals.

12. (original) The system of claim 11 wherein determining the orientation of the object is based on multiple sets of the sensor output signals.

13. (original) The system of claim 1 wherein the controller further:

determines a subset of the output signals of the sensors having signal levels that are greater than those of other output signals;

fits a polynomial to the output signals of the subset;

determines one of a maximum and minimum of the polynomial; and

determines the orientation of the object based on the one of the maximum and minimum.

14. (original) The system of claim 13 wherein the subset includes at least three of the sensor

output signals.

15. (original) The system of claim 1 wherein the controller determines the orientation of the object further based on a known factor of the type of a type selected from the types consisting of: time, latitude, longitude, and altitude.

16. (original) The system of claim 1 wherein the controller determines the orientation of the object further based on a theoretical determination of the electromagnetic radiation source position.

17. (original) The system of claim 16 wherein the controller further determines the orientation of the object by comparing the theoretical determination of the electromagnetic radiation source position to an actual determination of the position based on the sensor output signals.

18.-32. (canceled)

33. (currently amended) A method for determining the orientation of an object relative to a source of electromagnetic radiation comprising:

placing an object at a stationary, land-based location;

receiving, at a plurality of sensors on the object, electromagnetic radiation emitted by a single source, each of the sensors producing a corresponding output signal in response to the received electromagnetic radiation;

determining an actual position of the single source of electromagnetic energy based on the sensor output signals;

computing a theoretical position of the single source of electromagnetic energy; and

comparing the actual position to the theoretical position to determine the orientation of the stationary object.

34. (currently amended) The method of claim 33 wherein the single source of the electromagnetic radiation is the sun.

35. (original) The method of claim 33 wherein the electromagnetic radiation is of a type selected from the group consisting of visible radiation, infrared radiation, and ultraviolet radiation.

36. (original) The method of claim 33 wherein the sensors are optical sensors.

37. (original) The method of claim 36 wherein the optical sensors comprise photodiodes.

38. (original) The method of claim 37 wherein the output signals are derived from the intensity of light radiation received at the photodiodes.

39. (original) The method of claim 33 wherein each of the sensors has a corresponding viewing angle having a center line, and wherein the center lines are at known orientations relative to each other.

40. (original) The method of claim 33 wherein the center lines of the respective sensors are at angles relative to each other.

41. (original) The method of claim 40 wherein the center lines lie on a plane.

42. (original) The method of claim 41 wherein the center lines intersect at a common point.

43. (original) The method of claim 33 further comprising sampling multiple sets of the sensor output signals at periodic time intervals.

44. (original) The method of claim 33 wherein determining the actual position of the source

of electromagnetic energy is based on multiple sets of the sensor output signals.

45. (original) The method of claim 33 further comprising:

determining a subset of the output signals of the sensors having signal levels that are greater than those of other output signals;

fitting a polynomial to the output signals of the subset;

determining one of a maximum and minimum of the polynomial; and

determining the actual position of the source of electromagnetic energy based on the one of the maximum and minimum.

46. (original) The method of claim 45 wherein the subset includes at least three of the sensor output signals.

47. (original) The method of claim 33 wherein computing a theoretical position of the source of electromagnetic energy is based on a known factor selected from the types consisting of: time, latitude, longitude, and altitude.

48. (withdrawn) The method of claim 33 [[18]] wherein the plurality of sensors comprises a two-dimensional array of sensors.

49. (withdrawn) The method of claim 48 wherein the two-dimensional array of sensors comprises a charge-coupled device (CCD) array.

50. (new) The system of claim 1 wherein the land-based location is an earth-based location and wherein the single source of electromagnetic radiation is external to the atmosphere of the earth so that the path of electromagnetic radiation from the single source to the sensors passes through the atmosphere of the earth.

51. (new) The method of claim 33 wherein the land-based location is an earth-based location

and wherein the single source of electromagnetic radiation is external to the atmosphere of the earth so that a path of the electromagnetic radiation from the single source to the sensors passes through the atmosphere of the earth.

52. (new) A system for determining the orientation of an object relative to a source of electromagnetic radiation comprising:

a plurality of sensors, each of the sensors producing a corresponding output signal when placed in the path of electromagnetic radiation emitted by a source; and

a controller for receiving the output signals of the sensors, and for determining the orientation of the object relative to the source based on the sensor output signals, wherein the controller further:

determines a subset of the output signals of the sensors having signal levels that are greater than those of other output signals;

fits a polynomial to the output signals of the subset;

determines one of a maximum and minimum of the polynomial; and

determines the orientation of the object based on the one of the maximum and minimum.

53. (new) The system of claim 52 wherein the subset includes at least three of the sensor output signals.

54. (new) The system of claim 52 wherein the source of the electromagnetic radiation is the sun.

55. (new) The system of claim 52 wherein the electromagnetic radiation is of a type selected from the group consisting of visible radiation, infrared radiation, and ultraviolet radiation.

56. (new) The system of claim 52 wherein the sensors are optical sensors.

57. (new) The system of claim 56 wherein the optical sensors comprise photodiodes.

58. (new) The system of claim 57 wherein the output signals are derived from the intensity of light radiation received at the photodiodes.

59. (new) The system of claim 52 wherein each of the sensors has a corresponding viewing angle having a center line, and wherein the center lines are at known orientations relative to each other.

60. (new) The system of claim 52 wherein the center lines of the respective sensors are at angles relative to each other.

61. (new) The system of claim 60 wherein the center lines lie on a plane.

62. (new) The system of claim 60 wherein the center lines intersect at a common point.

63. (new) The system of claim 52 wherein the controller samples multiple sets of the sensor output signals at periodic time intervals.

64. (new) The system of claim 63 wherein determining the orientation of the object is based on multiple sets of the sensor output signals.

65. (new) The system of claim 52 wherein the controller determines the orientation of the object further based on a known factor of the type of a type selected from the types consisting of: time, latitude, longitude, and altitude.

66. (new) The system of claim 52 wherein the controller determines the orientation of the object further based on a theoretical determination of the electromagnetic radiation source position.

67. (new) The system of claim 66 wherein the controller further determines the orientation of the object by comparing the theoretical determination of the electromagnetic radiation source position to an actual determination of the position based on the sensor output signals.

68. (new) A method for determining the orientation of an object relative to a source of electromagnetic radiation comprising:

receiving, at a plurality of sensors, electromagnetic radiation emitted by a source, each of the sensors producing a corresponding output signal in response to the received electromagnetic radiation;

determining an actual position of the source of electromagnetic energy based on the sensor output signals;

computing a theoretical position of the source of electromagnetic energy; and

comparing the actual position to the theoretical position to determine the orientation of the object, and further comprising:

determining a subset of the output signals of the sensors having signal levels that are greater than those of other output signals;

fitting a polynomial to the output signals of the subset;

determining one of a maximum and minimum of the polynomial; and

determining the actual position of the source of electromagnetic energy based on the one of the maximum and minimum.

69. (new) The method of claim 68 wherein the subset includes at least three of the sensor output signals.

70. (new) The method of claim 68 wherein the source of the electromagnetic radiation is the sun.

71. (new) The method of claim 68 wherein the electromagnetic radiation is of a type selected

from the group consisting of visible radiation, infrared radiation, and ultraviolet radiation.

72. (new) The method of claim 68 wherein the sensors are optical sensors.

73. (new) The method of claim 72 wherein the optical sensors comprise photodiodes.

74. (new) The method of claim 73 wherein the output signals are derived from the intensity of light radiation received at the photodiodes.

75. (new) The method of claim 68 wherein each of the sensors has a corresponding viewing angle having a center line, and wherein the center lines are at known orientations relative to each other.

76. (new) The method of claim 68 wherein the center lines of the respective sensors are at angles relative to each other.

77. (new) The method of claim 76 wherein the center lines lie on a plane.

78. (new) The method of claim 76 wherein the center lines intersect at a common point.

79. (new) The method of claim 68 further comprising sampling multiple sets of the sensor output signals at periodic time intervals.

80. (new) The method of claim 68 wherein determining the actual position of the source of electromagnetic energy is based on multiple sets of the sensor output signals.

81. (new) The method of claim 68 wherein computing a theoretical position of the source of electromagnetic energy is based on a known factor selected from the types consisting of: time, latitude, longitude, and altitude.